REMARKS

Claims 1 to 14 are currently pending in this application. Claims 2, 3 and 6 have been withdrawn by the Examiner. Once new claims 15 to 24 are entered, claims 1 to 24 will be pending.

In the office action dated February 20, 2007, the Examiner objected to claims 5 and 7 to 13 as improper multiple dependent claims. Applicants have amended claims 4, 5 and 7 to 12 to depend from claim 1. Applicants submit that the Examiner's objection is now rendered moot and should be withdrawn.

The Examiner contends that claims 1, 4, 5 and 7 to 14 are rejected as either anticipated by, or as being obvious over, US Patent No. 6,245,272 to Takita et al. ("Takita et al."), as evidenced by the Concise Encyclopedia of Polymer Science and Engineering (the "Encyclopedia"). The Examiner contends that Takita et al. teach that HDPE copolymers are suitable polyolefins. The Examiner further contends that because it is well known that ethylene is commonly copolymerized with propylene as an α-olefin to form HDPE, as evidenced by the Encyclopedia, and Takita et al. teach that HDPE copolymer can be formed from broad molecular ranges, it would be routine for a person skilled in the art to optimize the HDPE in Takita et al. to obtain the beneficial properties and melt processibility of the claimed HDPE copolymer. The Examiner asserts that selecting a suitable HDPE copolymer, in a suitable blend ratio, in a suitable weight range, with a suitable MI, is either anticipated or would be obvious to persons skilled in the art and that the claim limitations fail to produce a distinct battery separator that is not taught by Takita et al. Office Action, page 4 to 5.

Applicants respectfully traverse the Examiner's rejections for the reasons below.

Claim 1 Is Not Anticipated By Takita et al.

Takita et al. disclose a microporous polyolefin membrane for use as a battery separator. The membrane comprises either composition A or composition B. Composition A comprises an ultra-high molecular weight polyolefin having a weight-average molecular weight of 5 $X10^5$ or more. In a preferred example, the example relied upon by the Examiner in the Office Action, composition B comprises:

a) an ultra-high molecular weight polyolefin (B-1) having a weight-average molecular weight of $1X10^6$ or more, preferably in a range of $1.5X10^6$ to $15X10^6$; and

b) a polyolefin (B-2) having a weight-average molecular weight of $1X10^4$ or more, but less than $1X10^6$, and preferably less than $5X10^5$.

Further, composition B comprises 1 wt. % or more of polyolefin B-1, preferably 15 to 40 wt. %. Preferable polyolefins include polypropylene, polyethylene and compositions thereof.

The examiner admits that with respect to at least claim 1, Takita et al. is silent about:

1) the co-monomer ratio of the high density polyethylene copolymer and its melt index (MI);

2) the viscosity average molecular weight (Mv) of the high density polyethylene; and

3) the Mv and co-monomer content of the blend.

As admitted by the Examiner, Takita et al. are deficient in describing each of the limitations of claim 1. Applicants submit that the microporous film of claim 1 is therefore not anticipated by Takita et al. In order for a claim to be anticipated under 35 U.S.C. 102, a reference must teach every aspect of the claimed invention either explicitly or

inherently. *Merck & Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1372 (Fed. Cir. 2003). Takita et al. do neither of these.

At col. 3, lines 7 and 8, Takita et al. merely mention that high density, low density, or medium density polyethylene may be used, without further describing any features of the polyethylene. At col. 3, line 3, Takita et al. disclose in general that copolymers of ethylene and propylene may be used as polyolefins but, again, no additional features of the copolymers are disclosed. Although the Examiner asserts that Takita et al. disclose incorporation of propylene ethylene copolymer to improve melt-down temperatures and characteristics of battery separator membranes, Applicants submit that Takita et al. disclose no such thing. At col. 3, lines 26 to 28, Takita et al. only discuss the incorporation of polypropylene generally in battery separator membranes.

In addition to the numerous shortcomings of Takita et al., the Examiner also fails to explain how any of the many recited and missing elements of claim 1 are inherent in the teachings of Takita et al. To the extent that the Examiner is relying on the Encyclopedia to demonstrate that the many recited and missing elements of claim 1 are inherent in Takita et al., such an argument is not compelling. The case of *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268, (Fed. Cir. 1991) is illustrative of this point.

> To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. (emphasis added)

In the present case, the Examiner has failed to show that all of the claim limitations of claim 1 are necessarily present in the compounds disclosed by Takita et al., or that persons skilled in the art would so recognize. The Examiner seeks to rely on the Encyclopedia as evidence that propylene is commonly copolymerized with ethylene to form HDPE. However, the Encyclopedia fails to provide any evidence of the admittedly absent elements of claim 1. To the extent that the Examiner is relying on Table 3 in Encyclopedia, that table expressly relates to LLDPE copolymers and is not relevant here. In summary, none of the missing elements of claim 1 are inherent in Takita et al. (as further supplemented by Encyclopedia).

Finally, it is generally accepted that if a prior art reference merely describes a broad genus but does not specifically describe a later-claimed species, the prior art reference does not anticipate the claimed species, even if the genus encompasses the species. See *Atofina v. Great Lakes Chemical Corp.*, 441 F.3d 991, 999 (Fed. Cir. 2006). The Examiner contends without any factual support that persons skilled in the art would be able to produce the claimed compounds with routine experimentation. Applicants submit that, due to the large number of microporous films that are possible within the broad range disclosed by Takita et al. and the lack of guidance from Takita et al., persons skilled in the art would not be able to create the claimed microporous film without excessive experimention. Takita et al. do not place a person skilled in the art in possession of the claimed microporous film and thus do not anticipate the claimed film.

> When a reference discloses a class of compounds, i.e., a genus, a person of ordinary skill in the art should be able to "at once envisage each member of th[e]...class" for the individual compounds, i.e., species, to be enabled [for the purposes of anticipation]. If the members cannot be envisioned, the reference does not disclose the species and the reference is not enabling.

Impax Labs, Inc. v. Aventis Pharmaceuticals, Inc. 468 F.3d 1366, 1383 (Fed. Cir. 2006).

For the above reasons, Applicants submit that claim 1 and dependent claims 4, 5 and 7 to 14, are not anticipated by Takita et al., even when considered in light of the Encyclopedia. Applicants request withdrawal of the Examiner's rejection.

Claim 1 Is Also Non-Obvious Over The Cited Prior Art

Applicants submit that the microporous film of claim 1 is also non-obvious over Takita et al. separately or in combination with the Encyclopedia. In an analysis of obviousness, the Examiner must:

(A) Determine the scope and contents of the prior art;

(B) Ascertain the differences between the prior art and the claims in issue; and

(C) Resolve the level of ordinary skill in the pertinent art.

Graham v. John Deere Co., 383 U.S. 1 (1966). Applicants submit that the Examiner has failed to make a *prima facie* showing of obviousness.

Takita et al. by themselves or in combination with the Encyclopedia do not disclose all of the limitations of claim 1. For example, no where do Takita et al. mention that HDPE copolymers are preferable. In addition, there is no mention of α-olefin content, nor co-monomer ratios. These deficiencies are not supplied by or in any way taught in the Encyclopedia. Although the Encyclopedia describes HDPE in general, nowhere does the Encyclopedia describe the recited co-monomer ratios, Mv values, MI values, or blend characteristics.

Moreover, in order for optimization of a parameter to be obvious, as the Examiner contends is the case here, the prior art must recognize that the parameter is a result-effective variable. See *In re Antonie*, 559 F2d 618, 620(CCPA 1977) and MPEP

2144.05(II)(B). However, not only do the cited references not teach a person skilled in the art how to achieve the properties in the claimed compounds, but neither reference would lead one skilled in the art to believe that these properties would provide the advantages to microporous film disclosed in the present application.

As recited in claim 1, the composition comprises an HDPE copolymer having a content of an α-olefin unit with 3 or more carbon atoms of 0.1 to 1% by mole. As disclosed at paragraph [0040] of the published application, the features of the claimed microporous film enhance balancing of fusion properties with heat resistance and mechanical strength. Nowhere does Takita et al. or the Encyclopedia disclose, for example, that by selecting the recited elements such properties would follow, nor do they disclose the advantages of such properties. It would not be possible for a person skilled in the art to predict the advantages of the claimed features in view of Takita et al. and the Encyclopedia.

Several unexpected advantages of the claimed features are demonstrated, for example, by comparing the properties of the microporous films generated in Example 1 and Comparative Example 6 in the specification. Example 1 and Comparative Example 6 comprise an HDPE having an MI of 0.8 and a propylene comonomer. See paragraphs [0106] and [0122] of the published application. However, in Example 1 the propylene unit content is 0.6%, which is within the claimed α-olefin content range of 0.1 to 1% by mole of claim 1. In Comparative Example 6, the propylene unit content of the microporous film is 1.3 mol %, or outside the claimed range. As shown in Table 1, the film of Comparative Example 6 had inferior heat resistance and the film rupture temperature was as low as 145°C. In contrast, Example 1 demonstrated a film rupture temperature as high as 157°C. In light of these results, Applicants submit that persons

skilled in the art would not have been able to predict the improved results from the claimed α-olefin content range, and the cited art does not teach this feature.

Given the large number of polymer films that may be encompassed by the Takita et al. disclosure, and without guidance on the specific features that must be modified, there is no expectation that a person of ordinary skill in the art would be able to create the claimed film with all of the recited limitations by routine experimentation.

Accordingly, Applicants submit that claim 1 is not obvious to one skilled in the art over Takita et al. separately or in combination with the Encyclopedia, and therefore request withdrawal of the Examiner's rejection.

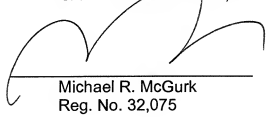
In accordance with the above, Applicants respectfully submit that all claims are allowable.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Date: June 6, 2007

By: 

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